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## U.S. FACTORIES ARE WORKING AGAIN; FACTORY WORKERS, NOT SO MUCH

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Factories were humming back to life even before a pledge to revitalize American manufacturing helped propel Donald Trump to the presidency.

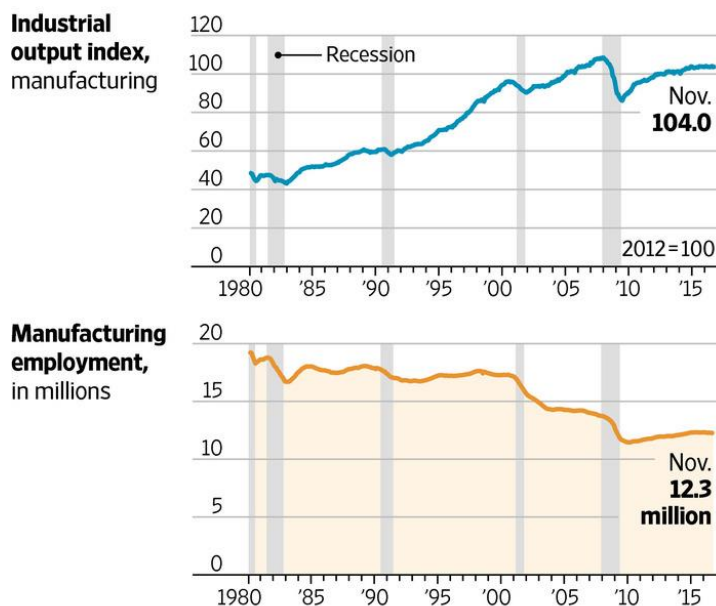
But jobs aren't returning in kind, a reality that will make it tough for Mr. Trump—or anyone—to significantly boost employment in the industrial heartland, as he has pledged to do. Technology and automation have given manufacturing companies the means to function, and even thrive, with fewer employees than ever before.

Manufacturing output is nearing prerecession levels. But about 1.5 million factory jobs—about 20% of positions lost during the downturn—haven't returned. Manufacturers employed 12.3 million people in November, down from 13.7 million in December 2007, when the recession officially began.

Factory output was flat in November while manufacturing employment fell from the previous month, according to Federal Reserve and Labor Department data. Indeed, factory output has largely bounced back since the recession but manufacturing employment has lagged behind.

### More with Fewer

American manufacturing output is nearing prerecession levels but improved productivity is allowing factories to operate with fewer workers.



Note: Data are seasonally adjusted. Sources: Federal Reserve (output); Labor Dept. (employment)  
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Overall the number of positions on U.S. payrolls grew 11% between June 2009, when the recession officially ended, and November, when the Labor Department counted about 145 million jobs on nonfarm payrolls. Manufacturing payrolls grew only 5% during that span.

Well-trained workers are in demand. The number of open manufacturing positions is at a 15-year high. But a swath of low-skilled former factory workers seems frozen out of the increasingly high tech sector no matter how fast the economy grows.

"We have two economies, and the other won't ignite no matter how much gasoline you throw on it," said Pippa Malmgren, founder of H Robotics, a robotics development company, and a member of Indiana University's Manufacturing Initiative.

William Strauss, an economist at the Federal Reserve Bank of Chicago, expects the share of U.S. workers in manufacturing to keep falling from its current 8.5% level as productivity and efficiency obviate the need for big workforces.

"We've seen these trends going on for decades, and it's unlikely to see a reason why those would change," Mr. Strauss said.

Mr. Trump has suggested otherwise. At a rally in Des Moines, Iowa this month he reiterated plans to slash regulations and shake up trade relations with China that he says will create economic growth and new jobs.

Late last month he and Vice President-elect Mike Pence convinced [United Technologies](#) Corp.'s Carrier to keep about a third of 2,100 jobs it had planned to move to Mexico in Indiana, in exchange for \$7 million in incentives over 10 years. A few days later he castigated Milwaukee-based [Rexnord](#) Corp. on Twitter for [plans to move](#) many of about 350 jobs to Mexico.

It isn't clear such an adversarial approach or higher growth will send manufacturers on a hiring binge, even if growth ramps up. Many companies say it's just easier to do more with fewer employees. United Technologies Chairman and Chief Executive Greg Hayes told CNBC this month an investment to automate the Indianapolis Carrier plant "ultimately means...there will be fewer jobs."

By some measures, investments in manufacturing technology have been slow in coming. The Association for Manufacturing Technology said orders for new factory machinery this year were down 6% as of October, compared with the same point in 2015. But the association noted October was the third consecutive month of year-to-year gains. A rebound in factory investments could spell another headwind for manufacturing employment.

When Ron DeFeo took over [Kennametal](#) Inc., this year, he scrapped plans to move the Pittsburgh-based machine-tool maker's U.S. factories to Mexico. That spared thousands of Kennametal employees from potential layoffs, a fate that befell millions of American workers in recent years as factories shifted to countries with cheaper labor.

But Mr. DeFeo's decision came with a trade-off: a more than \$200 million overhaul of many Kennametal's factories that could yet replace hundreds of workers with machines. "We may have too many people," Mr. DeFeo said. "You just walk around our manufacturing operations and you can see opportunity to automate all over the place."

Mr. DeFeo said he hopes increasing demand will allow him to hire more workers. Those jobs in modernized factories would likely require a higher skill set than some of his current workers possess. Low-skilled workers who leave companies like Kennametal may be left behind.

Some new manufacturers aren't hiring many workers at all.

Jeff Freeland Nelson in 2012 opened a factory in St. Paul, Minn., to make sets of children's building blocks out of recycled packaging. He hired a handful of people to run the high-powered water jets that cut out the brightly colored toy pieces that he calls YOXO. Last year his sales jumped fivefold. He still employs just eight people, including himself.

"You have to reinvent the factory a little bit if you're going to be competitive with toys manufactured abroad," he said.

Since the election, Mr. Trump has acknowledged the trend toward automation in manufacturing, telling the [New York Times](#) that the U.S. would make more products, including the robots that could replace workers.

If Mr. Trump succeeds in revving up U.S. manufacturers, there's already room for more output. U.S. factory capacity utilization was about 75% in November, the Federal Reserve said, compared with an average of 79% over the last four decades.

That means there could be room to hire more workers—if fresh efficiency gains don't render additional employees unnecessary.